REMARKS

Claims 1, 5, 8-12, and 17-22 are pending in this application. By this Amendment, claims 1, 5, 8-12 and 17-20 are amended, and claims 21 and 22 are added. Claims 1, 12 and 19 are amended to further distinguish over the reference cited in the Office Action. Claim 1 is also amended to overcome a claim objection. Claim 8 is amended to incorporate the features of claims 1-4, 6 and 8 therein. Claim 17 is amended to incorporate the features of claim 16 therein. Claims 5, 8-11, 18 and 20 and the specification are amended to correct minor grammatical errors therein.

No new matter is added to the application by this Amendment. Support for the language added to claims 1, 12 and 19 and new claims 21 and 22 can be found within the claims as originally filed, in the Abstract and in the specification at page 33, lines 21-25.

Reconsideration of the application is respectfully requested.

I. Allowable Subject Matter

Applicants note with appreciation that claims 7 and 8 would be allowable if rewritten in independent form and to overcome the claim objection as set forth below

Further, Applicants note with appreciation that claims 16 and 17 would be allowable if rewritten in independent form.

II. Claim Objection

Claims 1-11 were objected to for alleged informalities. Applicants have amended claim 1 to replace the phrase "reference right beam" with the phrase "reference light beam." Applicants respectfully request withdrawal of the objection to the claims.

III. Rejection Under 35 U.S.C. §102(b)

Claims 1-6, 9-15 and 18-20 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 6,697,180 to Wilson et al. The rejection is respectfully traversed.

The Patent Office alleges that Wilson et al. teaches each of the features recited in claims 1-6, 9-15 and 18-20. Applicants respectfully disagree.

Wilson et al. fails to disclose a hologram recording method includes the intensity distribution of the reference light beam on the optical recording medium substantially coincides with the intensity distribution of the signal light beam and the hologram is recorded by using only a Fourier transform component of the signal light beam in which a spread ζ from a zero-order light beam of the Fourier transform image of the signal light beam is defined by the following formula: $0 \leq \zeta \leq 4f\lambda/d$, where f is a focal distance of the lens for irradiating the optical recording medium with the signal light beam, λ is a wavelength of the signal light beam, and d is a length of one side of one bit data of the signal light beam as recited in claim 1.

Further, Wilson et al. fails to disclose a hologram recording method having the hologram that is recorded by using a Fourier transform component of the signal light beam in which a spread ζ from a zero-order light beam of the Fourier transform image of the signal light beam is defined by the following formula: $0 \leq \zeta \leq 4f\lambda/d$, where f is a focal distance of the lens for irradiating the optical recording medium with the signal light beam, λ is a wavelength of the signal light beam, and d is a length of one side of one bit data of the signal light beam as recited in claim 12.

Moreover, Wilson et al. fails to disclose a hologram recording apparatus having the intensity distribution of the reference light beam on the optical recording medium substantially coincides with the intensity distribution of the signal light beam and the hologram is recorded by using only a Fourier transform component of the signal light beam in which a spread ζ from a zero-order light beam of the Fourier transform image of the signal light beam is defined, when the signal light beam holds a two-dimensional digital data image, by the following formula: $0 \leq \zeta \leq 4f\lambda/d$, where f is a focal distance of the lens for irradiating

the optical recording medium with the signal light beam, λ is a wavelength of the signal light beam, and d is a length of one side of one bit data of the signal light beam as recited in claim 19.

Wilson et al. discloses a holographic storage process in which an array of overlapping holograms is recorded or reconstructed in a recording medium. Further, Wilson et al. teaches that the holograms are being produced by interference of a reference beam and a signal beam, in which the reference beam is a phase beam which consists essentially of a multitude of rays of varying angles of incidence and non-uniform phase. See Abstract of Wilson et al. Still further, Wilson et al. discloses that the phase mask imparts phase content to the reference beam and outputs a phase beam that illuminates a spot on the disk. See col. 6, lines 33-36 of Wilson et al.

Wilson et al. thus teaches that the reference beam includes a multitude of rays of varying angles of incidence and non-uniform phase. See the Abstract and col. 2, lines 60-64 of Wilson et al. The multitude of rays for the reference beam that illuminates a spot on the disk of Wilson et al. is not taught or suggested to substantially coincide with the intensity distribution of the signal light beam as required in the present claims 1 and 19. Thus, the spot illuminated by the reference beam of Wilson et al. is not the same as or similar to the recited irradiating region on the optical recording medium for the reference light beam that substantially coincides with the irradiating region on the optical recording medium for the signal light beam of claims 1 and 19. Additionally, the hologram of Wilson et al. is not taught or suggested to be recorded by using only the recited Fourier transform component as required in claims 1, 12 and 19. Therefore, Wilson et al. fails to teach the recited method of claims 1 and 12 and the recited hologram recording apparatus of claim 19.

As shown in FIG. 1 of the present application, a conventional reference light beam irradiating region is significantly larger than the signal light beam defocused region or the

signal light beam Fourier transform region. As a result, a conventional reference light beam such as Wilson et al. irradiates a region larger than the region irradiated with the signal light beam to prevent loss of information carried in the signal light beam. See page 5, lines 9-15 of the present specification. Thus, the recording medium is also exposed in a region other than the region where the hologram is recorded, i.e., a region other than the region which has been irradiated with the signal light beam. Further, a new hologram cannot be recorded in such an excessively or unnecessarily exposed region and, as a result, there is generated the problem that the recording capacity is decreased. See page 5, line 23 - page 6, line 4 of the present application.

However, contrary to the conventional reference light beam, the recited reference light beam of claims 1, 12 and 19 has an irradiating region that substantially coincides with the irradiating region of the signal light beam as shown in FIG. 1 of the present application. Accordingly, only the necessary region of the optical recording medium needed for recording information of the signal light beam is exposed and the regions which need not be exposed will not be exposed. See page 18, lines 2 and 3 of the present application. As a result, the recording region to be recorded is micronized. See page 13, lines 21 and 22 of the present application. Nowhere does Wilson et al. teach or suggest that a recording region on the optical recording medium is micronized by providing an irradiating region of a reference light beam that substantially coincides with the irradiating region of the signal light beam as required in claims 1, 12 and 19. Wilson et al. thus is a conventional process as detailed above, and fails to anticipate the present claims.

Because the features of independent claims 1, 12 and 19 are neither taught nor suggested by Wilson et al., Wilson et al. cannot anticipate, and would not have rendered obvious, the features specifically defined in claims 1, 12 and 19 and their dependent claims.

For at least these reasons, claims 1-6, 9-15 and 18-20 are patentably distinct from and/or non-obvious in view of Wilson et al. Reconsideration and withdrawal of the rejections of the claims under 35 U.S.C. §102(b) are respectfully requested.

IV. New claim

Wilson et al. further fails to disclose or suggest a hologram recording method that includes supplying a recording signal of each page with predetermined timing so that each page of the hologram is recorded from a recording start position at an interval of a predetermined amount of shift as recited in claim 21.

Further, Wilson et al. further fails to disclose or suggest a hologram recording method that includes supplying a recording signal of each page with predetermined timing so that each page of the hologram is recorded from a recording start position at an interval of a predetermined amount of shift as recited in claim 22.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 5, 8-12, and 17-22 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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Date: July 24, 2007

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